

Space Technology Division Government Supplied Equipment List

The following list describes the major pieces of equipment furnished by the Government for use in supporting this contract. This list does not include common office or lab equipment.

Laboratory Equipment	Location
Netzsch TGA	TPS Lab (Bldg 223)
Netzsch Dilatometer	TPS Lab (Bldg 223)
Perkin Elmer TGA	TPS Lab (Bldg 223)
Perkin Elmer DSC	TPS Lab (Bldg 223)
CM Tube Furnace	TPS Lab (Bldg 223)
Lindberg tube furnace	TPS Lab (Bldg 223)
Small capacity muffle furnace	TPS Lab (Bldg 223)
Sputter deposition equipment (6' x 12')	TPS Lab (Bldg 223)
UV Ablation equipment (7' x 16')	TPS Lab (Bldg 223)
High-density radiant heater	TPS Lab (Bldg 223)
Gas Chromatography-Mass Spectrometer	TPS Lab (Bldg 223)
FT-IR Spectrometer (6' W x 2' D)	TPS Lab (Bldg 223)
Glovebox (8.5' W x 6' D)	TPS Lab (Bldg 223)
Drying oven (3' x 3')	TPS Lab (Bldg 223)
Chemical refrigerator (3' x 3')	TPS Lab (Bldg 223)
Thermolyne muffle furnace	TPS Lab (Bldg 223)
CM muffle furnace	TPS Lab (Bldg 223)
Autoclave (5' x 5')	TPS Lab (Bldg 223)
Grieve Oven	TPS Lab (Bldg 223)
Tape Caster (2.5' x 7.5')	TPS Lab (Bldg 223)
Bottom-Loading Muffle furnace	TPS Lab (Bldg 223)
Billet Press (3.5' x 4.5')	TPS Lab (Bldg 223)
UV 8 KW lamp Radiant Heater	TPS Lab (Bldg 223)
FT-IR Instrument & Microscope	TPS Lab (Bldg 223)
20" Bandsaw	Ceramics Lab (Bldg 242)
Manual Lathe	Ceramics Lab (Bldg 242)
CNC Lathe	Ceramics Lab (Bldg 242)
CNC Mill	Ceramics Lab (Bldg 242)
30" Disc Sander	Ceramics Lab (Bldg 242)
16" Disc Sander	Ceramics Lab (Bldg 242)
Surfacing Mill	Ceramics Lab (Bldg 242)
Drill Press	Ceramics Lab (Bldg 242)
Grinding Wheel	Ceramics Lab (Bldg 242)
Power Hack Saw	Ceramics Lab (Bldg 242)
Sand Blaster	Ceramics Lab (Bldg 242)
10" Table Saw	Ceramics Lab (Bldg 242)
1 Cu. Ft. V- Blender	Ceramics Lab (Bldg 242)
1/2 Cu. Ft. V-Blender	Ceramics Lab (Bldg 242)
12 in. Billet Press	Ceramics Lab (Bldg 242)

Laboratory Equipment	Location
8in. Billet Press	Ceramics Lab (Bldg 242)
4in. Billet Press	Ceramics Lab (Bldg 242)
Small Attritor	Ceramics Lab (Bldg 242)
Router Table	Ceramics Lab (Bldg 242)
31"x31"x24" Sintering Furnace	Ceramics Lab (Bldg 242)
12"x12"x12" Sintering Furnace	Ceramics Lab (Bldg 242)
10"x10"x10" Sintering Furnace	Ceramics Lab (Bldg 242)
Thermal technologies hot press	Ceramics Lab (Bldg 242)
Oxygen hot press	Ceramics Lab (Bldg 242)
Drying Ovens (2)	Ceramics Lab (Bldg 242)
Burnout Furnace	Ceramics Lab (Bldg 242)
Uni- Axial Cold Press	Ceramics Lab (Bldg 242)
14" Band Saw	Ceramics Lab (Bldg 242)
Low Pressure Hot Iso -Static Press	Ceramics Lab (Bldg 242)
Optical Comparater	Ceramics Lab (Bldg 242)
Deburring Machine	Ceramics Lab (Bldg 242)
Helium Leak Detecter	Ceramics Lab (Bldg 242)
Gas pressure furnace	Ceramics Lab (Bldg 242)
Struers cut off saw	Ceramics Lab (Bldg 242)
Ultra low water/oxygen glove box	Ceramics Lab (Bldg 242)
Carver hand press	Ceramics Lab (Bldg 242)
Roller Apparatus	Ceramics Lab (Bldg 242)
Planetary ball mill	Ceramics Lab (Bldg 242)
Attritor mill	Ceramics Lab (Bldg 242)
Cold isostatic press	Ceramics Lab (Bldg 242)
Freeze dryers (2)	Ceramics Lab (Bldg 242)
Drying ovens (2)	Ceramics Lab (Bldg 242)
Side-Arm Reactor	Materials Characterization Lab (Bldg 234)
FT-IR Spectrophotometer	Materials Characterization Lab (Bldg 234)
UV/Vis Spectrophotometer	Materials Characterization Lab (Bldg 234)
FT-IR Instrument & Microscope	Materials Characterization Lab (Bldg 234)
Helium Pycnometer	Materials Characterization Lab (Bldg 234)
Brunauer-Emmett-Teller surface area measurement	Materials Characterization Lab (Bldg 234)
Particle Size Analyzer	Materials Characterization Lab (Bldg 234)
SEM/EDX (Energy Dispersive X-Rays)	Materials Characterization Lab (Bldg 234)
X-Ray Diffraction	Materials Characterization Lab (Bldg 234)
Instron	Materials Characterization Lab (Bldg 234)
Micro Hardness Tester	Materials Characterization Lab (Bldg 234)
Metallography equipment	Materials Characterization Lab (Bldg 234)
Microscopes	Materials Characterization Lab (Bldg 234)
Radiant Heater	Materials Characterization Lab (Bldg 234)
Conductivity Guarded Hot Plate	Materials Characterization Lab (Bldg 234)
TDA -Dilatometer	Materials Characterization Lab (Bldg 234)
FEI environmental SEM	Materials Characterization Lab (Bldg 231)

Laboratory Equipment	Location
Windows-based Lab PCs (10)	Various lab locations

Office/Computer Equipment	Location
Mac Desktop Computers (140 Division wide)	Bldgs 223, 229, 230, 234, 242
SGI Servers (3)	Bldg 234
Intel Linux Compute Nodes (6)	Bldg 234
Intel Linux File Server	Bldg 234
Intel Windows Backup Server	Bldg 234
Backup Tape Library	Bldg 234
Intel Windows Desktop PCs (2)	Bldg 234
Printers (6)	Bldg 234
Scanners (2)	Bldg 234
Intel P4 Xeon (28 nodes, 56 processors)	Bldg 230
DEC Alpha (16 nodes)	Bldg 230
SGI Octane workstations (4)	Bldg 230

DPLR	Finite rate thermal and chemical 3D nonequilibrium Navier-Stokes computational fluid dynamics code used for computing aerothermodynamic properties of re-entry vehicles as well as simulations of arc-jet, shock tube, ballistic range, and shock tunnel experiments (massively paralleled)	NASA
Traj and TrajOpt	TPS design and optimization tool for atmospheric bearing planetary entry, with capabilities for trajectory determination, aerodynamic modeling, atmosphere models, equilibrium thermodynamic modeling, convective and radiative heating models, and TPS material response modeling	NASA
Gridgen and GridPro	Grid generation tools capable of structured and unstructured multi-block surface grids and structured multi-block volume grids	Commercial license
Hypermesh	Surface tessellation tool	Commercial license
NEQAIR	Nonequilibrium radiation transport analysis to compute radiative emissions or line-of-sight radiation	NASA
TecPlot	Flowfield visualization and data plotting package	Commercial license
Pro/E	CAD generation package	Commercial license
MSC.Marc	Finite element analysis package	Commercial license
FIAT	"Fully Implicit Ablation and Thermal Response" program	NASA
TITAN	"Two-dimensional Implicit Thermal Response, Pyrolysis and Ablation" program, a 2-D version of FIAT	NASA